WHAT IS CLAIMED IS:

1. A method for preparing a chemical solution, comprising the steps of:

dissolving a chemical gas in a liquid to prepare the chemical solution, wherein the liquid is pure water or a mixture having a predetermined composition; and

discharging at least either one of an adjusted amount of the chemical gas that was not dissolved in the liquid and a predetermined amount of the chemical solution, wherein the dissolving step and the discharging step are performed at substantially the same time.

2. The method according to claim 1, wherein the dissolving step includes forming a swirl of fine bubbles of the chemical gas in the liquid.

3. The method according to claim 2, wherein the dissolving step includes ejecting the bubbles in a direction inclined relative to a vertical direction.

4. The method according to claim 1, wherein the dissolving step includes cooling the liquid.

5. The method according to claim 1, wherein the discharging step includes forming bubbles of the chemical gas that was not dissolved by the dissolving step to return the undissolved chemical gas to the liquid.

6. The method according to claim 1, wherein the discharging step includes reintroducing the chemical gas that was not dissolved by the dissolving step to the liquid when the concentration of the undissolved chemical gas is equal to or greater than a predetermined value.

7. The method according to claim 1, wherein used chemical gas disposed of by a facility for fabricating electronic devices is dissolved in the liquid in the dissolving step.

8. The method according to claim 1, further comprising the steps of:

collecting chemical gas from used chemical solution disposed of by a facility for fabricating electronic devices; and

supplying the collected chemical gas to the liquid.

9. The method according to claim 8, wherein the collecting step includes at least one of heating the chemical solution and forming inert gas bubbles in the chemical solution.

10. The method according to claim 1, wherein the chemical gas includes at least one of a group consisting of ammonia gas, hydrogen fluoride gas, hydrogen sulfide gas, and hydrogen chloride gas.

11. The method according to claim 1, wherein the chemical gas is ammonia gas, and the chemical solution includes at least one of a group consisting of ammonia water, a mixture of ammonia water and hydrogen peroxide, and a mixture of ammonium fluoride and hydrofluoric acid.

12. The method according to claim 1, further comprising supplying a raw material that differs from the chemical gas to the prepared chemical solution.

13. A chemical solution preparation apparatus comprising:

a preparation tank for storing a liquid, which is one of pure water or a mixture having a predetermined composition;

a dissolution unit for dissolving a chemical gas in the liquid; and

at least either one of a gas discharge control unit for discharging an adjusted amount of the chemical gas that was not dissolved in the liquid by the dissolution unit and a liquid discharge control unit for discharging a predetermined amount of the chemical solution from the preparation tank, wherein one of the gas discharge control unit and the liquid discharge control unit is operated at substantially the same time as the dissolution unit.

14. The preparation apparatus according to claim 13, wherein the dissolution unit includes a gas supply unit for forming bubbles of the chemical gas in the preparation tank to dissolve the chemical gas in the liquid.

15. The preparation apparatus according to claim 13, wherein the gas supply unit includes a first pipe for supplying the chemical gas to the preparation tank and a flow controller arranged in the first pipe.

16. The preparation apparatus according to claim 13, further comprising a cooling unit for cooling the liquid in the preparation tank.

17. The preparation apparatus according to claim 16, wherein the cooling unit includes a pump for circulating the chemical solution between the preparation tank and a second pipe and a cooling element connected to the second pipe.

18. The preparation apparatus according to claim 16,

wherein the cooling unit includes a cooling element connected to the preparation tank and a pump for circulating the chemical solution between the preparation tank and the cooling element.

19. The preparation apparatus according to claim 16, further comprising a gas cylinder containing liquefied chemical gas, wherein the cooling unit includes a heat exchanger for exchanging heat between the gas cylinder and the preparation tank.

20. The preparation apparatus according to claim 13, wherein the dissolution unit includes a bubbler element for supplying the chemical gas into the liquid, and wherein the bubbler element has a nozzle for forming fine bubbles of the chemical gas.

21. The preparation apparatus according to claim 20, wherein the nozzle is inclined by a predetermined angle relative to a vertical direction.

22. The preparation apparatus according to claim 20, wherein the nozzle extends vertically, and the bubbler element further includes a deflection plate for guiding the bubbles in a predetermined direction.

23. The preparation apparatus according to claim 13, further comprising:

a concentration measuring device for measuring the concentration of the chemical solution; and

a concentration adjusting device for adjusting the concentration of the chemical solution in accordance with the measured result of the concentration measuring device.

24. The preparation apparatus according to claim 23, wherein the concentration measuring device includes at least one of a viscosity meter, a specific gravity meter, an ultrasonic wave velocity meter, and a specific conductance meter, and wherein the concentration adjusting device includes a controller for calculating the concentration of the chemical solution from the measured result of the concentration measuring device and controlling the amount of the chemical gas supplied to the preparation tank from the dissolution unit in accordance with the calculated concentration.

25. The preparation apparatus according to claim 24, wherein the concentration measuring device measures the heat of reaction during dissolution of the chemical gas with a thermometer and calculates the amount of dissolved chemical gas from the measured result to obtain the concentration of the chemical solution.

26. The preparation apparatus according to claim 24, wherein the chemical gas is contained in a container, and wherein the concentration measuring device calculates the amount of the used chemical gas by measuring the change in the weight of the container and calculates the concentration of the chemical solution from the amount of the used chemical gas.

27. The preparation apparatus according to claim 13, further comprising an ice particle generator for generating ice particles, and wherein the dissolution unit causes contact between the ice particles and the chemical gas to dissolve the chemical gas in the liquid.

28. The preparation apparatus according to claim 13,

further comprising a gas purification unit for purifying the chemical gas with pure water.

29. A chemical solution preparation apparatus comprising:

a dissolution unit for dissolving a chemical gas in a liquid to prepare a chemical solution and cooling the chemical solution during the preparation; and

a gas discharge control unit for discharging an adjusted amount of the chemical gas that was not dissolved in the liquid by the dissolution unit.

30. The preparation apparatus according to claim 29, wherein the dissolution unit is connected to a facility for fabricating electronic devices to dissolve used chemical gas disposed of by the fabrication facility in the liquid.

31. The preparation apparatus according to claim 30, further comprising a gas purification unit for purifying the chemical gas with pure water and providing the purified chemical gas to the fabrication facility.

32. The preparation apparatus according to claim 29, further comprising a gas collection unit connected to the dissolution unit and a facility for fabricating electronic devices, wherein the gas collection unit collects chemical gas from used chemical solution disposed of by the fabrication facility, and supplies the collected chemical gas to the dissolution unit.

33. The preparation apparatus according to claim 32, wherein the gas collection unit collects the chemical gas by performing at least one of heating the chemical solution and forming inert gas bubbles in the chemical solution.

34. The preparation apparatus according to claim 29, further comprising a pipe for supplying the chemical gas to the dissolution unit and a flow controller arranged in the pipe.

35. The preparation apparatus according to claim 29, wherein the chemical gas is contained in a predetermined container, and wherein the preparation apparatus measures the weight of the chemical gas in the container to calculate the amount of the chemical gas supplied to the preparation tank.

36. The preparation apparatus according to claim 29, further comprising a hydrophobic filter for separating undissolved chemical gas from the chemical solution discharged by the dissolution unit, the separated chemical gas being supplied to the gas discharge control unit.

37. The preparation apparatus according to claim 29, further comprising a concentration measuring device for extracting some of the chemical solution during the preparation and measuring the concentration of the chemical solution, the concentration of the chemical solution being adjusted to a predetermined concentration by supplying the chemical gas to the chemical solution during preparation.

38. The preparation apparatus according to claim 29, further comprising a raw material supplying device for supplying a raw material that differs from the chemical gas to the prepared chemical solution.